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HIGH AND LOW BLOOD PRESSURE

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A
MONOGRAPH
50p.

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OF THE
KINGSTON CLINIC, EDINBURGH

BLOOD PRESSURE

by C. Leslie Thomson

FOREWORD

A couple of years after writing his classic *The Heart,* James C. Thomson produced a companion work, *High and Low Blood Pressure,* which extended the principles to a wider field. The second book was regularly reprinted over about twenty-three years, but the publishers decided against further issue after 1962. We still receive requests for the book, and what follows is an attempt to re-state the essential points in a concise fashion.

CHAPTER I — CLARIFICATION

Many unfortunates have been told that they suffer from 'blood pressure' but few are given any explanation of what that signifies. Often it means little in itself, but may give rise to serious anxieties. Often the diagnosis is incorrect, because too little regard is given to the whole state of the patient. Even where diagnosis is technically accurate, the treatment based thereon may be inappropriate, because the physician has failed to recognise primary causes and directs his efforts at suppressing symptoms. These comments may themselves seem to lack positive value, but their significance should become clear as we proceed. Even the gravest abnormality of blood pressure is but a symptom of some irregularity of structure or function elsewhere, and it often calls for real patience to follow the links and so discover what adjustments are necessary; even more patience to persevere with the reforms which these entail.

For Nature Cure methods to work effectively, the full co-operation of the patient is essential, and that implies an understanding of the elements of his problem. Long words and involved technicalities are no help here, therefore we must try to describe and explain situations and methods in the plainest possible way.

NECESSITY

It is widely imagined that all 'blood pressure' must indicate serious ill-health, and this belief reflects looseness of expression and lack of understanding. Blood pressure is essential to human life. Blood pressure means the force exerted by the blood upon the vessels which contain it. Pressure is what causes the blood to flow along the vessels; the blood travels from wherever the pressure is high to wherever it is lower. There is nothing mystic or unusual about this; blood behaves like any other fluid. In all higher forms of animal life, blood must circulate; pressure, which is the agency by which this is effected, is thus a vital necessity. If some of this appears insultingly elementary to you, dear reader, please be assured that these basic facts are often overlooked or misunderstood by those most closely involved.

The forces which drive the blood onward are purely physical, and they depend upon the differences in pressure in the various parts of the circuit. There is no real meaning in the expression 'the blood pressure' as a fixed figure. Our blood is subject to many different pressures, according to where in the body it is located, at what phase of the pulse and the overall state of the body. Throughout life these factors produce a wide range of pressures, each of which is constantly varying. The highest pressure occurs within the powerfully muscular left side of the heart, when the contraction of the ventricle sends the blood out on its journey around the body. From this point, its pressure falls progressively until it has completed its circuit and arrives back in the thorax—as venous blood—to re-enter the heart. If, at this moment, the individual happens to be drawing in a breath, the pressure may be lower than that of the outside atmosphere—there is 'negative pressure'. A vigorous inspiration thus not only draws fresh air into the lungs, it exerts a suction on the veins, so assisting the circulation; it increases the difference between the pressure at the start of the circuit and at its completion.

ADEQUACY

However, there are limits to the pressures which heart and vessels have to bear, if health is to be maintained. Excessive pressures must impose excessive stresses, and tissues and organs other than heart and vessels may be severely strained. The picture may be clarified by resort to analogy; the household water supply must have a pressure sufficient to overcome gravity and the friction within the pipes, so that when any tap is opened there is an adequate flow. Inadequate pressure means a poor supply, and the probability of the top of the house being at times totally deprived. Excessive pressure is likely to mean constant trouble with such items as tap-washers and boilers. (It would require an enormously excessive pressure, however, to threaten to burst the pipes, and there are parallels here, also. New pipes, of sound material, can withstand a manifold overload; ageing pipes, subjected to corroding influences, may be ruptured by quite small, passing increases in pressure.)

The range between adequacy and dangerous excess is wide, in anything like normal conditions. Throughout a reasonably healthy life the pressures of the blood vary considerably. There is nothing alarming, or even unusual, about this. In perfectly healthy individuals, passing circumstances may call for exceptionally high pressures, although these should normally be of brief duration. Rapid alterations are not indicative of disorder; indeed, they may be confirmations of vigorous health. Only when high pressures remain *after the need has passed* do they suggest abnormality.

FACTORS

The foregoing observations are comparatively basic, and in any real-life case have to be modified to allow for other factors. The needs of various tissues and organs alter from minute to minute, whether as a result of taking food, being emotionally disturbed, being physically active, altering one's posture, being chilled or overheated, as well as a number of other possibilities. The net effect is that pressure all over the body, as well as in the heart itself, are being adjusted with great rapidity and this entails considerable expenditure of energy within the control centres and muscles. However, in a healthy person there is neither consciousness of all this activity nor any undue fatigue as a result of it.

Climate, in the broadest sense, and environment—equally widely applied—are just as significant as the makeup of the individual. Occupational stresses take many forms, as do the emotions involved in domestic and social relationships. Anything which impinges upon the person's nervous and physical balances may produce effects of more than transient duration; these effects may in turn lead to prolonged departure from the normal blood-pressures. In a few words, if the system has adequate reserves, imposed stress produces raised pressures; if there is a lowered vital state, added exhaustion will reduce the ability of heart and muscle to maintain pressures.

EFFORT

Statistics tend to be regarded with misgiving by many sensible, honest people, because they can be manipulated to 'prove' something which simple reason rejects; like so many other devices, they are often degraded by being misused for financial gain. However, honest and unbiased figures can sometimes convey vital information in a telling way. Those which follow are offered hopefully as being in the latter category.

The heart is the hardest-working organ in the body, ordinarily contracting about 60 to 75 times per minute, and so driving the blood onward. As each chamber of the heart relaxes, it is immediately refilled with blood, and this cycle is repeated—with only very exceptional missed or imperfect beats—throughout the person's life. In engineers' terms, a typical heart produces some 22 foot-tons of energy every 24 hours. (This means that the work done by the heart would lift one ton to a height of 22 feet in that time). Rather fancifully, if the heart were a mountain-climber, it could raise its own weight from sea-level to the top of Ben Nevis some 35 times in a day. (It takes an exceptional mountain-climber to make that ascent twice in one day). If we multiply that figure by the seventy years of an average life, our mountain-climbing heart would have scaled no less than *two million miles!*

No less impressive is that the heart accomplishes all this work almost noiselessly and without fuss of any kind. So long as health is maintained, there is no strain; the individual remains unaware of the elegant balances and adjustments of his circulatory system. Perhaps almost as remarkable is that the healthy heart rests for much longer than it works. That is, the total time spent in contraction amounts to about 8 or 9 hours in the 24.

In a person of average build, the total quantity of blood is about ten pints and, ordinarily, the heart handles about half this volume every minute. However, with training, an exceptionally energetic person may demand ten to twenty times this flow. The blood itself consists of a thin fluid—containing dissolved substances—and numerous microscopic bodies, the red and the white cells, or *corpuscles*. A drop of blood contains about five million red cells, and about twenty thousand white. As a final item of statistical lore, if the red cells in an average person could be laid out edge to edge, they would reach most of the way to the moon!

COLOUR

Returning to more realistic matters, the essential substance in the red cells is haemoglobin. In the presence of oxygen, this is bright red, the colour indicating that the haemoglobin has absorbed that gas fully. However, where oxygen-rich haemoglobin encounters tissues lacking in oxygen, it yields it quite freely. In doing so, it loses its bright colour. It also has the ability to absorb carbon dioxide from tissues in which this acidic gas is formed, and assumes a dark, purplish colour as a result. As the blood eventually reaches the lungs, the haemoglobin gives up its carbon dioxide, becomes recharged with oxygen, resumes its red colour and is ready for another circuit of the system.

This gaseous transport and interchange is one of the blood's vital functions. Another is helping to maintain the normal temperature within all important parts of the body; blood from active, heat-generating tissues is rapidly directed to areas where the heat may be dissipated in cool air. Still another function is the transport of nutrient substances from the alimentary tract to all parts of the body. Less often recognised is the equally vital necessity of transporting wastes of all kinds from the cells to the organs which extract and eliminate acidic and other breakdown products.

DRIVE

It is probably not necessary to describe in any detail the sequence of events within the heart itself. Sufficient, perhaps, to say that the right half of the heart receives stale blood from the veins, and pumps it into the lungs; that the left half receives freshly-oxygenated blood from the lungs and drives it around the rest of the body. However, it may be as well to stress once again that the heart is by no means the sole mechanism for circulating the blood. Every movement of trunk or limbs assists the process, by alternately compressing and releasing veins which contain numerous one-way valves.

The arteries, although not contributing in quite so simple and positive a way, have a vital role in making the heart's work as easy as possible. Their elasticity and muscular tone absorb the pressure-wave of each pulse, and then reflexly exert a dynamic thrust which maintains the force of the pulse on its journey. Arteries which have lost their liveliness—which have become 'sclerosed'—tend rather to kick *against* the pulse in an unyielding way, so that the heart faces a more difficult task and the onward flow soon loses its impetus.

The arteries themselves do little more than convey the blood to the smallest vessels—the arterioles and capillaries. It is the microscopic size and comparably thin walls of these latter which allow the blood to perform its vital functions of bringing oxygen and nutrients to the cells, tissues and organs of the body, and of removing some of the wastes from these. A considerable proportion of the liquid part of the blood —the *plasma*—also seeps out through the thinnest vessel walls and bathes the surrounding cellular tissues. (The plasma is eventually re-absorbed by another transport system—the lymphatic—and returned to the general circulation).

An important factor here is that if the blood has too high a water content, or if the vessels are lacking in tone, or if the blood-pressure is abnormally high, there tends to be an excessive escape of plasma. This is most evident where there is little strength in the skin containing the tissues, and in the lower parts of the body. Swollen ankles are a common instance of this *oedema*. (Apart from being unsightly, it is indicative of distress in the vital systems, and it also tends to diminish the mechanical strength of tissues such as ligaments, muscles and skin. Displacements, sprains and bruising occur too easily.)

CHAPTER II — VESSELS AND NERVES

The blood vessels are living and working structures. Not only must they expand and contract many times per minute, their *average* size has also to be controllable, rapidly and precisely, so that changing needs of various parts of the body may be efficiently met. Every change in posture, change of occupation minute by minute, arousal of digestive activity and passing emotional state may entail considerable changes in the relative sizes of vessels in different areas.

These changes are effected by tiny muscles situated around the walls of the arteries, and the controlling messages are conveyed by the *vaso-motor* nerves. The vast network of vasomotors has the power of limiting or increasing the quantity of blood in any part of the body at any given time, and it is in the smaller arteries and arterioles that the greatest influence is exerted. (The larger arteries and the tiniest capillaries both tend to maintain their normal sizes.)

The strength of the heart's pulse is most powerfully evident in the largest arteries. The speed of the blood's flow is also highest in them. As the arteries repeatedly subdivide, the total cross-sectional area of the arteries increases many hundreds of times; accordingly, the speed of travel in the tinier vessels becomes comparatively leisurely. (Here, the picture of a mountain torrent turning into a broad, unhurried river on the plain is appropriate.) Also, as the blood proceeds from large to small artery, then to capillary and into the running-together and enlarging veins, the vessel walls show a progressive lessening of the tough and elastic tissue. This, in the larger arteries, absorbs a considerable proportion of the force of the pulse, thus saving the muscles in the walls much unprofitable exertion. Since the pulse virtually disappears in the capillaries, there is no need for this passive reinforcement in the veins.

ARTERIES AND VEINS

Whereas the arteries maintain their tubular shape in a tough and elastic way, even when there may be little blood pressure within, the veins tend to collapse unless there is a sufficient flow and pressure of blood to inflate them. The contrast between the appearance of superficial veins in an inactive and in a vigorously-used limb can be impressive. When almost empty, they appear only as bluish lines under the skin; when full, they bulge massively. Another significant point about the difference between artery and vein structure is that when pressure is applied from outside, arteries are not easily flattened but veins have little or no resistance to offer. A limb which is subjected to encircling pressure will have open arteries but closed veins; the part beyond the constriction becomes swollen, congested and soon acutely uncomfortable. A similar state of affairs occurs when pressure is exerted upon the vessels in the neck by excessive tensions in the muscles.

We have already mentioned the pumping effect of intermittent pressure upon veins—and discussed it at greater length on numerous other occasions—also the effect of vigorous respiration which exerts alternations of pressure and suction upon the large veins returning to the heart. These, and the factors we have discussed above, combine to assist or impede circulation and in total largely determine the blood pressure in any particular area at any particular time. However, these are little more than the mechanical aspects of the matter. As many laymen know, nervousness in all forms can exert a powerful influence upon blood pressures, but the way in which this occurs calls for some understanding. The links between emotion and blood pressure are powerful, but the mechanisms are not always simple. Part of the complexity arises from the fact that nervous controls within our systems are of two kinds, and we would do well to try to distinguish between them.

NERVOUS SYSTEMS

We readily recognise one of those nervous systems, because we are conscious of its working; we exert volition and things happen, or we receive messages and have perceptions. This is variously known as the *voluntary,* the *central* or the *cerebro-spinal* system. It is characterised by being subject to will and being conscious. Many of its functions may have become automatic, through long and intensive training, but at any time we can arrest, increase or modify the sequence of events, by deliberate effort. For instance, the complex steps in reading aloud have to be developed by patient and sometimes uncomfortable application of conscious exertion. After a time, the whole thing is so well practised that it seems no effort at all, yet it remains under the control of the central system.

The other system, variously known as *involuntary, vegetative* or *sympathetic,* has functions not under the control of our conscious wills. The vegetative system regulates such things as muscles within vital organs or tissues, the digestive tract, the heart and blood vessels. Our digestive processes, with its varied glandular functions, are also directed by the involuntary system.

The two systems are by no means clearly separated; often they work together and even share the same network of nerves. The instance above, of reading aloud, is one in which the conscious preceded the unconscious ability and remains dominant. Breathing shows the reverse situation; we can teach ourselves to breathe in particular ways, but when the conscious effort is turned off the unconscious resumes its primary dominance. The similarly complex function of walking is probably about equally under conscious and unconscious control; neither alone could perform adequately. All this may be reduced to the simplification that some of our functions are essentially under our conscious control; many more are controlled without our conscious knowledge; probably most of all are under variable proportions from each system.

RELATIONSHIPS

Some of the responses are so rapid that, even though produced by the voluntary system, we are unaware of the steps and believe the process to be involuntary. Others may seem to be the product of deliberate effort, yet could not take place without a major contribution from the vegetative. We develop skills by repetition, so that the central mind need not be consulted before each action is taken. We may imagine that we respond deliberately to certain situations, whereas in truth our reactions may be almost totally dictated by our vegetative systems. The relationship between consciousness, awareness and voluntary control, and between the unconscious intelligence and sympathetic control, and between these two groups, is not simple. It varies within the same individual according to rapidly-changing circumstances. It varies between individuals. It varies with the state of health.

However, no matter how difficult to unravel, or how complex the near-automatic responses we teach ourselves, such developments of the central system remain quite distinct from the truly vegetative, vital system's activities. For example, kidney functioning, perspiration, the complex workings of the liver, even so seemingly simple a thing as the production of saliva; all these and many more are totally outwith our central or 'will-power' control. There just are no linkages between the two nervous systems where so deeply vital activities are concerned. One might almost gain the impression that some matters are too serious and important to be placed at the mercy and whim of conscious thought. Indeed, had we the ability to turn our glandular and internal flow-control systems on and off by exercise of will, we should quickly destroy ourselves. The temptation to spare ourselves discomfort would certainly result in fatal errors.

VITAL NEEDS

Even crediting ourselves with perfect, conscious judgment, it would be impossible for a finite mind to be constantly aware of the needs of even the most elementary vital needs—e.g. respiration, heart action and the regulation of temperature. Just as in our central system we have to learn to delegate an enormous amount of work to near-automatic devices—or 'sub-brains'—so that we can give reasonable attention to the needs of each waking moment, so we have to rely even more completely on the truly automatic system to look after the enormous mechanism of vital activity. Were we faced with the need to control all the muscles of our vital systems by conscious effort, we should rapidly collapse; to take only one aspect, sleep would be impossible, and total exhaustion would result.

Our automatic nervous system not only controls the routine actions of our vital organs, it has to regulate all manner of activities to meet varying—sometimes violently and often repeated—changes in the body's needs. Working balances have to be maintained with rapid and delicate precision, and it all happens so smoothly that seldom is the average person aware of anything taking place. No less remarkable is that major adjustments can be set in motion by stimuli of the tiniest magnitude, yet with this great sensitivity the entire mechanism is robust, self-adjusting, self-repairing and can run for a lifetime without serious breakdown.

TONE

Among the many finely-tuned adjustments so sustained is *muscle tone.* Most people are almost instinctively aware of its significance, and those of us engaged in manipulative treatment are greatly helped in our understanding of the patient's problems and condition by what we feel in his muscles. In health, all muscles are held in a state of slight contraction. This is produced by a small but steady stream of impulses from the control centres to the muscles. The effect is to keep the muscles in a state of readiness, so that they respond instantly when the need arises for action. (Almost inevitably reverting to analogy, the engines need not be started up from cold when required; they are already ticking over quietly.) Not only is the response prompter when tone is good, it is also more accurate because restraint or local control is an essential part of precise movement, and both the forward-moving and the opposing muscles in any area all take part in this.

When the muscles are less ready, we talk of 'atony', or say that the individual is 'atonic' . . . tone is deficient. At the other extreme, an excess of tone is distressing and wasteful of energy; the individual is 'highly strung'.

The walls of the blood vessels have muscles, as we noted earlier, and these must have their tone properly regulated, just as with the muscles which—under our voluntary control—move our trunks and limbs, lips and tongues. In the same way, we estimate the condition of our patients from what we can observe of their vascular tone, and the way in which this determines circulatory efficiency and control. Here, the effect of increased tone is to constrict the vessels, and so to raise the pressure upon the blood contained by them. Excessive tone thus contributes directly to high blood pressure. Lowered tone allows the vessels to dilate; there is less constraint and the overall blood pressure is low.

INFLUENCE

Proportionately, the smaller vessels contain more muscle tissue than the larger, and—in total—they present a far larger cross section. Accordingly, the overall tone of the vascular system depends almost entirely upon that of the smaller vessels. The greater the extra squeeze upon the smallest vessels, the greater the rise in general blood pressure. More than that, it is the muscular control of the smaller vessels which determines how much blood is present in any given part of the body at a particular time.

It has been estimated that if all the smaller vessels were allowed to be relaxed at the same time, their total capacity would be about twelve *gallons*. In life, they are so firmly held in control that less than ten *pints* of blood fills them. This indicates the enormous margin which exists for control of distribution; in a small area, for example, by complete relaxation there could be almost one hundred times as much blood as when normal tone is present. However, *small* is the operative word: obviously the larger the region of relaxation, the more completely must all other regions be starved of blood. Some of the practical results of this we shall discuss shortly. Meantime, let us note that at all times the vasomotor centres are actively and intelligently ensuring that adequate supplies of blood reach tissues and organs most in need of it; simultaneously inactive or dormant areas are being temporarily held to very small rations.

THE ABDOMEN

The rabbit-fancier knows well one result of uneven distribution of blood. Any rabbit may be lifted by the ears without hurting it; but whereas a wild rabbit will squirm for a long time, and be none the worse when released, the tame rabbit will be comparatively calm and is liable to fall quickly into unconsciousness and to die. The older and less-exercised the rabbit the greater the risk: lack of tone in its abdominal muscles makes it impossible for the gravitational effect to be countered; the blood simply drains away from the brain and fills the abdominal vessels. Within a few minutes, acute anemia of the brain induces death.

Humans, too can be afflicted with poor abdominal tone, usually as a result of unbalanced feeding and lack of exercise. Possibly the worst everyday situation is just after a heavy meal, in a warm room and getting up from a sitting position. The demands of the digestive organs have already caused distention of vessels in the abdomen; warmth adds to the loss of general tone, and standing upright removes some support from the abdomen at the same time as increasing the gravitational pull towards the feet. Partial or total blackout, or fainting, are common results. Fortunately, humans are rarely suspended by the ears in such circumstances, so they are free to collapse in a heap. The pressures thus automatically become more uniform throughout the body, and a sufficient circulation is restored to the brain. (If, for any reason, a person faints and is held upright—as in a high wing-chair—the risk of serious harm to the brain is considerably increased. The head must be allowed to fall, if the automatic life-saving adjustment is to take place.)

Anyone who finds difficulty in picturing the series of events described above may care to try experimenting with a rubber hot-water-bottle. Half-fill this with water, then press gently upon each side with the palms of the hands. It is not difficult thus to make the water rise exactly to the neck; relax a little and the water level falls; increase a little and it overflows. Then hold the bottle up by the neck and observe the shape it assumes—just like a person with sagged abdominal walls. Lay the bottle down, so the neck is almost on the table, and once more the water reaches the neck. Lastly, try squeezing the two sides of the bottle briskly together and you will have a vivid—even if rather messy—illustration of how the vigorous action of the heart drives the blood through the great arteries, some seventy times per minute!

To avoid anemia of the brain with rapid changes of posture, it is thus necessary to be neither a tame rabbit nor a saggy hot-water-bottle. It is also desirable to avoid heavy meals; becoming overheated; becoming overtired and emotional shock—which last can result in drastic reduction of blood-vessel tone.

CHAPTER III — FIGURES AND FACTORS

Historically, the terms 'high blood pressure' and 'low blood pressure' only began to have significance when suitable measuring instruments had been devised. Before these, physicians had to be content with the impression they received of the vigour of the pulse by feeling it at the wrist. Possibly the earlier patients were at no disadvantage, because the more positive new methods led to a tremendous increase in the bandying-about of diagnostic terms. It became fashionable to have 'high' or 'low' pressure, preferably accompanied by the figures obtained with the new wonder-instrument with the ponderous name—*sphygmomanometer*. (Translated from the Greek roots='pulse-pressure-measurer'). This took place remarkably recently; only just before the turn of the century —in 1896—the essential mechanism of present-day instrument was devised. (In addition to this type, found in every doctor's surgery, we now have the impressively complex electronic instruments which can give far more rapid readings; however, these confer no additional benefit on the patient.)

As we have so often observed, a new method of diagnosis leads to increased numbers of cases, and the 'sphyg' was no exception. Within a very short time, thousands of persons who had until then believed themselves to be healthy were discovered to be invalids. Robust men were attached to the new instrument, and then ordered to rest, avoid exercise, retire early to bed and avoid any kind of excitement; they had *high blood pressure*. And, right enough, in quite a short time their weakness became much more evident. They became overweight, breathless, lethargic and anxious. Others, told they had *low blood pressure,* simply stopped trying to do anything; they were instructed that the low pressure made any kind of effort dangerous.

CRITIC

In truth, the great majority of these people were originally in no worse condition than the average, fairly healthy citizens around them; but they had been given a diagnosis. From that point, suggestion and stupid treatment took their toll. It took fully half a century before a saner attitude began to infiltrate the medical profession. In the meantime, outspoken critics—like James C. Thomson—were roundly condemned for daring to challenge orthodoxy. He pointed out that the best possible treatment for disordered circulation is exercise, coupled with balanced feeding and a wholesome mental attitude to the problem. This contrasted harshly with the accepted teachings, in which exercise was a dangerous burden, diet totally ignored and a mixture of mystery and fear the proper emotional state.

It is also historically interesting that in his original *High and Low Blood Pressure,* James C. Thomson considered it necessary to devote six pages to an account of the development, application and interpretation of the sphygmomanometer; matters which today we tend to take for granted. But then we should remind ourselves that in J. C. T's. student days the 'sphyg' was a novelty, and even when that book was written the instrument was distressingly often misunderstood. For the present, it should be enough to note that, as ordinarily used, the sphygmomanometer provides the operator with two significantly different readings; the *systolic,* or 'peak' pressure, and the *diastolic,* or 'resting' pressure. (That the last term is inaccurate and potentially misleading is probably of concern mainly to the technically-minded. In a few words, the diastolic is more correctly described as the lowest pressure to which the blood in the brachial artery falls before the following pulse arrives to produce yet another peak pressure.)

The third, commonly quoted, pressure—the *differential* or 'pulse pressure'—is simply the result of subtracting the diastolic from the systolic. Each of these figures can be of significance in building up a picture of the subject's cardiac and vascular condition, and each can be seriously misleading if inadequate attention is given to the overall state and circumstances of the individual. Thus we find that although in one set of conditions a large difference between systolic and diastolic is characteristic of defective kidney function, in others a similar differential pressure is associated with the healthy, well-nourished athlete. Most striking in the latter case is the slowness of the pulse: this allows the pressure within the artery to fall much further between one pulse and the next. It is indicative of ample reserve capacity, so that when the need arises the circulatory traffic can be enormously increased without distressingly rapid heart-rate.

A MULTITUDE OF FACTORS

If we accept the assertion put forward earlier, that the pressure at any given point and moment is the result of the body's adaptation to need, then we must also recognise that many factors may be involved in reaching the result. It is no great exaggeration to say that it needs a computer to detect, evaluate and produce an immediate and suitable response to all the possible variables—after all, most computers are but limited attempts to imitate the abilities of the human nervous system. Our conscious minds, however, have less capability in this respect than our unconscious intelligence; therefore if we are to succeed at all in understanding what is involved, we have to consider each factor in turn. If we attempt to understand and correlate everything from the beginning, we shall merely confuse ourselves.

As a starting-point, let us set out the principal factors. The first is the strength of the heart-beat. Then, as we have already seen, the tone of the blood-vessels is important, since unless there is adequate tone the vessels will be too spacious to be filled with the available quantity of blood. The tone, in turn, is controlled and maintained by the vasomotor nervous system, with its centres in the brain and spinal cord; the vaso-motor centres are closely linked with the entire nervous system of the body. The *quality* of the blood can have a marked effect, particularly when there is an overloading with viscous, acidic wastes, and the overall *quantity* is similarly significant. (These last two are closely inter-related. Should there be too much acidic material, the individual usually suffers from an abnormal thirst; if this is met by repeatedly drinking considerable quantities of liquid, it certainly dilutes the acidity, but also increases the volume of the blood.)

The points just listed may be the most commonly important, but there are often situations in which cause and effect are not clearly differentiated. Emotional states, whether passing or sustained, are both productive of and induced by excessively high blood pressures. Political and economic distress can both cause and be caused by physiological stress in the persons so involved. When our anatomical machines are driven too hard and subjected to excessive burdens, our thinking can be at least as much disordered as our vital functioning.

Again, in particularly sensitive cases, such easily-overlooked factors as barometric pressure can be critical. Any considerable drop in this, whether due to meteorological change or to travelling at unaccustomed altitudes, can make it much more difficult for an adequate supply of oxygen to be maintained; heart and vascular pressures reflect the strain.

Last in this catalogue, although of sadly increasing importance through their wider use as medication, are the hormones. Naturally-produced hormones serve vitally-important functions in controlling a variety of bodily processes. These hormones, however, can be maintained at an abnormal level by persistent errors of behaviour—such as dietetic faults, destructive habits of thinking and excessive sexual activity. (The last is, of course, regarded as highly controversial these days; however, no-one can deny that the financial exploitation of sex is evil. Contraceptive pills are essentially hormonal, with side-effects which are only beginning to be admitted as terrible. The other effect, of seeming to remove the last restraint on sexual activity, means that the internal hormonal balance of the individuals concerned is likely to be seriously and persistently disturbed. As in so many other cases where the clever merchant so generously offers 'Have it now, pay later', the cost proves to be alarmingly high relative to the benefits obtained.)

Whether ingested for such purposes, or administered by a doctor with the intention of making good a suspected deficiency of the natural hormones, radical disturbance of pressures, tensions and vital activities must follow upon the introduction of those powerful 'chemical messengers' beyond the body's control.

BLOOD CONTENTS

Not only hormones—natural or foreign—affect strongly the strength of the pulse. Anything which causes irritation within the vessels—so tending to produce constriction—and anything which adds to the stickiness of the blood results in greater resistance to the heart's contractions. The healthy heart ordinarily tries to carry out its full duty of squeezing its normal volume of blood into the arteries with each beat. Should this prove more difficult than usual, the heart-muscle merely contracts more powerfully; the pressure of the systolic peak is raised.

Assuming that the difficulty is temporary, the heart automatically and gradually reverts to its normal vigour. However, if the cause of the obstruction cannot be promptly dealt with, or if the individual persists in the habits which produce it, there is no relief; either the heart continues to operate at an abnormally high tension or becomes so fatigued that the pressure falls. In the first case, there is a lasting strain upon those organs and tissues which take the most direct impact, of which the arteries themselves and the kidneys are obvious examples. In the second, the circulation becomes inadequate, particularly noticeable in the distant and most exposed parts—fingers, toes and skin generally.

The presence of excessive proportions of water in the blood is probably the commonest cause of persistent hypertension of this nature, and anything which induces abnormal thirst can be a primary factor. However, between plain water and the fearfully potent hormones these are many other substances which are popularly responsible. Tea, coffee and tobacco are the most widely used, but varients which more-or-less camouflage the situation are widely found. For example some 'herb teas' are just as drug-active as tea or coffee, and the active principle—caffein—is used in all kinds of stimulants and tonics, some with names suggesting innocent vegetable origin and composition. Again, many people believe the sales talk about glucose as a source of 'quick energy'. Whether taken in powder form or as a drink, glucose is a most disturbing factor when the blood is swamped by its arrival in quantity. That there may be evidence of stimulation is no justification for the cruelty inflicted on heart and kidneys as a result.

KIDNEYS

Kidneys come into the picture so often when the general health is disturbed, and these organs are also at the mercy of the individual's thoughtless or misguided habits. Kidneys subjected to excessive pressures become inefficient; inefficient kidneys lead to retention of wastes in the blood which induce hypertension. Long before the clinical signs of major breakdown—'nephritis'—we can see obvious indications of disorder in the less-than-healthy individual. Naturopaths tend to take a much more serious interest than orthodoxy in those signs, believing that when the 'classical diagnosis' can be made the condition is dangerously far advanced. We therefore tend to show more concern about what the patient eats and drinks, and in what ways his daily routines may contribute to those seemingly slight disorders. (That medical doctors are not totally uncaring about an excessive moisture-content in their patients is seen in their fairly free use of diuretics—'water pills'—which give an appearance of improved elimination by the effects of violently-toxic dosage.)

So far, we have outlined two out of three major factors in producing high blood pressure: the force of the heart-beat and the condition of the blood itself. The third concerns the resistance to flow offered by the smallest vessels and the capillaries. We have already noted that because of their astronomical numbers, these tiniest vessels have the greatest influence on pressure. When they lack tone, there may be so little resistance that fair distribution of the blood fails; when they are too much influenced by irritation from within or by nervous tensions from without, the flow of blood may be more or less obliterated. When we recall that it is in and around the capillaries that the vital processes of the circulation actually occur, the immediate importance of their tone needs no emphasis.

DYNAMIC

The regulation, balancing and—when necessary—rapid alteration of tone in all the various parts of the body is the responsibility of the vaso-motor system. This, in turn, is influenced by all manner of circumstances; postural, occupational, emotional, nutritional, psychological, thermal and climatic; and all of these may be either of prolonged or momentary duration. The more fully the vaso-motor controls can compensate, the better is the efficiency of the circulation, and in some circumstances the adaptation has to be instantaneous and almost violent. This last aspect is one which many people find difficult to accept, especially when it is accompanied by feelings or signs of distress. It is therefore without apology that I quote once again from a particularly impressive piece of writing by James C. Thomson; his Foreword to *Appendicitis:*

> Real health is rarely placid. As a rule it is a study in dynamics, and every now and again it can assume an aspect of sheer violence. This exuberance makes for misunderstanding. People mistake healthy reactions for disease and try to stop them, particularly as health phenomena are not generally studied. Indeed, except by the Nature Cure schools, *health,* as such, is not investigated. The usual acceptance is that health is a negative quality—a mere absence of symptoms of disease. This conception is ludicrously false.
>
> Consider a man who has swallowed a deadly fungus. If he is in a state of vigorous health his reaction will be sickness and diarrhoea. Not merely nausea, but a complete emptying of the stomach and bowels. The better the health of the individual involved, the more decisive will be this demonstration of house-cleaning.
>
> The first point to notice is that the more thorough and immediate the evacuation, the less will be the damage done to the patient. Anything which would soothe and nullify the expulsive effort would be deadly to the man, NO MATTER HOW KINDLY AND SCIENTIFICALLY APPLIED. It is a point of no little importance that THE MORE EFFICIENT THE METHOD USED, THE MORE DANGEROUS IT WOULD BE FOR THE PATIENT.

HOUSE CLEANING

The dynamism referred to in that passage is nowhere more evident than in the body's determination to sustain adequate circulation throughout itself. It is easy for the imperfectly-understanding observer to make totally misleading deductions from such associated signs as blood-pressure readings and pulse rate. With the best will in the world, the patient may be informed that he is an invalid, when in truth he is in a state of transition *from* invalidism and toward health. For certain eliminative and reparative processes to be carried through effectively it may be necessary for unusually high pressures and rates to be exerted by and within the tissues and organs of the body. To put it in familiar —even if over-simplified—setting, just imagine telling a housewife: 'Of course you should have a spring-cleaning, but you must not upset any of the normal household routines in the process, you must not derange the furniture nor upset mealtimes; there must be no sign of dust and dirt in the process; above all, you must make no unusual effort of any kind.'

Apart from the rather specialised circumstances of the 'spring-cleaning' crisis, throughout each day and night the various pressures of the heart and the network of vessels are subject to changes from moment to moment. Anger, pain and unpleasant dreams are all associated with very high systolic pressures. (Formerly it was asserted that the distressing nature of the nightmare *produced* the unusually high pressures; now it seems more reasonable to accept that the pressures and the uncomfortable imagery may both be the result of disorder within the system as a whole, and that cause and effect may be quite rapidly reversible—building up against each other until the stresses are great enough to awaken the subject.) Fortunately, the great majority of such exciting factors are of short duration; the heart and vessels can usually tolerate intermittent high tensions without injury.

INTERPRETATION

If the foregoing comments are properly understood, it must be obvious that the idea of a fixed systolic—or any other—pressure as an index of health is based on limited appreciation of cardiac and vascular function. The assertion that specific figures are characteristic of health is based upon illusion. Yet none of this should be taken as totally discounting readings as valuable aids to the diagnosis and treatment of persons with cardiac or circulatory disorders. So much depends upon the philosophy, training and interpretation of the individual practitioner, and possibly at least as much on the recognition of overall circumstances when the readings are taken. It is for this reason that we not only may find our readings at variance with those obtained by another person, but also come to quite different conclusions when the two sets of readings *are* in agreement. This is but another way of saying that blood pressure and pulse readings have significance which is far more subjective —liable to individual interpretation—than the specialist cardiologist would have one believe.

'I am told that I have a systolic pressure of 150; can you cure me?' is, to us, a question without real meaning. The figure only begins to signify something when we know not only how and when it was obtained, but the patient's emotional state at the time and his long-term conditions of living. In this connection it is essential to recognise the vital fallacy in the question—the suggestion that *we* can 'cure' the patient. The only person who can cure the patient is himself. Therefore, even taking the question in the colloquial sense, we have to know something of the patient's self-reparative abilities. Hence our need to inquire and investigate in what may at first appear to be irrelevant fields. How fond of tea; likes and dislikes in food; family relationships; parental health; conditions of work; general disposition; medication—whether 'household' or drastic; anxieties; ambitions; frustrations . . . and so on. To the person familiar with the Naturopathic approach, the relevance of these points needs no explanation: to the newcomer they may appear as an utter waste of time.

CHAPTER IV — NORMALITY AND VARIATION

Before we can usefully discuss abnormal ranges of blood-pressure, we must know something of normality. We have already noted that rapid fluctuations are essential to health, and must remember that the controls are exerted by living and adaptable mechanisms. In true High Level Health, any change in pressure will occur only in response to a demand by some tissue, organ or system in the body. In the early stages of abnormally high blood pressure, the excess is not in itself the evil; it is but a symptom. It has been brought about as a result of some abnormality of state or function in the bodily members.

Should the abnormally high pressures be sustained, however, other changes may be induced, of a harmful nature. Various functions may be rendered less efficient by the excessive pressures, with progressively serious effects upon the general health. However, this does not alter the fact that abnormally high pressure is primarily a *result* rather than a basic disorder. Perhaps for the moment we have sufficiently stressed the variability of 'normal' pressures; let us now look at a few simple instances of everyday response and variation.

INFLUENCES

First, draw a full, deep breath and immediately both systolic and diastolic pressures fall slightly. Now exhale with similar vigour, and this will cause a considerable increase in both pressures. With each action, the pulse rate is also influenced, speeding a little as the breath is drawn in and then slowing as the breath is driven out. Irritation, resentment and anger rapidly raise all pressures, whereas amusement and happy laughter can produce just as rapid a reduction.

To sit up, or stand, after being recumbent will cause the blood to gravitate toward abdomen and legs, with an immediate and considerable fall in pressures. In health, there is instant response and almost immediate compensation. Increased tone of the arterioles in the lower members restores pressure in the upper parts and, without any conscious effort or inconvenience, the entire bodily distribution is once more balanced.

Morning exercises, performed enthusiastically, produce a greatly increased demand for blood in the larger muscles; the heart answers this by beating more rapidly and more forcefully. At the same time, the smaller vessels and capillaries within the active muscles are dilated, to allow the freest flow of blood through the tissues. This means that *during exercise there is a marked lowering of the blood pressure within the muscles involved.* However, other parts of the body have their blood-vessels constricted by the vaso-motor controls, so that the systolic pressure in the body as a whole is raised. 'You cannot do two things at once' is an over-simplification; but certainly one cannot effectively exert one's self in two vigorous or intensive fashions at the same time; there just is not enough blood in the body to keep both adequately supplied for more than a few moments.

INTELLIGENCE

By those who would 'cure' blood-pressure disorders by medication, there is an almost total disregard of the body's own intelligence. Perhaps one detects a certain apprehension among the more enlightened members of the drug profession about this attitude. Those with a true philosophical outlook recognise that what is regarded as 'effective' medication must impose a totally artificial handicap upon the system. They observe the disruption of the patient's normal nervous responses and adjustments, and recognise that long-term such treatment can end only in failure. No matter how ingenious the method of administration or how accurately the dosage may be gauged, and whether of animal, vegetable or mineral origin, no drug has the ability to be *aware* of situations. A medicament cannot know when it is desirable that it should act and when it should be inert. It cannot detect the need of this, that or the other vital organ, and weigh each up against the needs of the body as a whole. These things can only be adequately dealt with by the body's own, all-pervading intelligence. And to the extent that any medication diminishes the promptness and accuracy of the 'computing' within that intelligence, it is a menace to the patient's wellbeing and vital prospects.

When, from whatever combination of causes, the body's own, intelligent, governing mechanism has broken down, the brutality of a drug to restrain or stimulate cardiac function or to alter vascular tone is unwarrantable. At best, it can only shift the most acute distress from one point to another. To 'quieten' a heart may seem merciful, but if the immediate result is to produce total failure of circulation in distant —possibly vital—tissues, the benefit is questionable. Similarly, if the heart is stimulated, obvious congestion may be cleared, but at the cost of cruel strain on such organs as the kidneys.

And that is putting the most favourable interpretation on the medico's treatment. In most cases, there has been no real 'breakdown' of the body's intelligence; rather we find that the body is rising with wonderful comprehension to a collection of terrible problems. The patient has, through a combination of ignorance and wilful disregard, brought about so abnormal a state of his bodily organs and tissues that heroic efforts by heart and vascular controls are required to sustain the vital processes. All manner of non-vital activities may have had to be allowed to diminish or lapse, so that the truly essential services may be kept going. For example, the patient may find himself quite suddenly unable to run up stairs. He should recognise this as an impressive warning. Instead, he asks his doctor for something to bring back his stair-climbing ability, and his doctor is quite likely to oblige. The body's intelligence is over-ruled by a foreign agent, and the patient ceases to be a self-regulating entity.

FURTHER INCREASES

Let us revert to the question of the effects of exercise and other common routines upon the blood pressure. Should the subject be a real enthusiast, performing morning exercises for fifteen to twenty minutes with true vigour, the systolic pressure may have been raised by forty to fifty points during the period. The diastolic will have also risen, but by only about half as much. Training tells, and the person who is both accustomed to such exercise and physically suited to it will show more modest increases. However, even he can produce increases of 60 points or more with unaccustomed exertion.

Heated and quite breathless, our subject may now head for the shower. Should he turn on warm water, this will produce perhaps only a nominal increase in his systolic pressure. But if he takes a real cold douche he is likely to experience a momentary pressure as great as at any time in his life. Assuming that the shower is reasonably brief, there should follow a considerable and steady drop in both systolic and diastolic pressures, with a slowing pulse; but the differential—the useful driving force—tends to remain high. The person has a sense of wellbeing and readiness to take on the day's tasks. (However, should he—through a misplaced streak of heroism—remain exposed to chilling water for too long, the after-effect will be much less pleasant and beneficial; he will feel chilled, tense and possibly aware of a rapid and protesting heart.)

If our subject is a hearty breakfaster, his pressures will be once more driven upward, until active digestion gets under way. Then the dilation of the vast capillary network in the abdomen will reduce the general tension. With normal reserves, this may not make him feel any less confident; but should his abdominal musculature be of poor tone, a number of uncomfortable effects may be experienced. He may feel quite drowsy or, in less severe cases, lacking in concentration. He may realise that the warm glow induced by his exercises and cold shower has been dissipated, leaving him rather chilly. His previous confidence may give way to irritability.

Home and office present problems to the nervous person, each incident producing a temporary rise in the systolic pressure. Even so, unless the person is unusually highly-strung, the general effect is a lowering of vascular tone as the day passes. A violent argument may raise the pressures of even a tired person to peaks not approached in the most severe sustained states. For those in whom the pressures tend to be over-high at all times, passing violent emotions can be dangerous. (Often the strain is not felt at all in the heart region; one giveaway is a sudden, stabbing ache in the kidney region. Should this be experienced in particularly distressing or exciting circumstances, it is well worth trying to avoid these.)

ANGRY AND FAINTING

In a healthy, young subject such passing peaks of pressure cause no serious distress; they fade almost as quickly as they arise. Their bad effect is much greater in the older—and therefore usually less physically-active—person. If for no other reason, because the surplus stimulant hormones, released in response to anger, are more quickly dissipated by muscular activity. Perhaps also because the young are more ready to drop an unpleasant matter and turn to something fresh.

Where the subject has poor general tone, the reaction after having been angrily aroused is quite severe. As the systolic pressure falls, the effects of gravity draw too much blood to the lower parts of the body and limbs; the person feels giddy or 'a little faint'. Should his vaso-motor compensations be sluggish he may indeed faint, as his brain is deprived of adequate circulation. This, too, has its automatic protective mechanism; if unimpeded, the subject slumps gently on to the floor and his head is then at the same height as his feet. The blood is thus instantly allowed to flow more uniformly throughout the system, and the brain is quickly restored to an adequately supplied state.

A widespread weakness among civilised people is lack of abdominal tone. The relaxed abdomen gives no support to the smaller blood-vessels, which form so massive a network within this region and, even when other circumstances are more-or-less normal, there is consequent distress upon the circulatory mechanism. The sympathetic nerve controls attempt to maintain adequate circulation by constricting vessels elsewhere in the body and by inducing the heart to beat more rapidly. Limbs, heart and brain may thus all suffer considerably.

Add to this any physical or emotional shock, or unaccustomed fatigue, and the situation may be enormously worsened. The person may faint and/or suffer from a spell of 'shock'. (Here it may be well to note that this expression is frequently misused by laymen, who are liable to speak of 'shock' when they mean 'stroke'. Shock is a more or less transient condition of reduced circulatory effectiveness, with a rapid pulse and reduced blood pressure in most parts of the body. Stroke may be a more lastingly serious condition, resulting from an 'incident' or 'accident' to a blood-vessel within the brain and causing some degree of paralysis. Unusually high blood-pressure may be the immediately precipitating cause of stroke; it is lack of pressure which produces the most noticeable signs of shock.)

The individual with 'guts'—or, as some might say, 'intestinal fortitude'—has ample reserves of muscular strength to hold the abdominal vessels in good shape, and he or she is not liable to collapse when confronted with unexpected or unhappy situations.

PELVIS

However, it is not only a sensitive disposition which renders the individual liable to distressing weakness. In many cases, we find that there are distortions of the pelvis—the large bony basin formed by the two haunch bones and the lower part of the spine—which account for severe and persistent handicap. The resultant distress may show in any of a wide range of ways. There may be backache, pains down the back of either leg, ache low in front, over the pubis, general severe discomfort within the abdomen or feelings of cruel strain running right up the spinal column. Any of these may be associated with a general fatigue, in which poor abdominal tone is likely to be evident. 'Sacro-iliac lesion' (distortion between the spine and haunch bones) is not properly within the scope of the present writing, but it may be mentioned that many unfortunates have undergone a variety of serious and futile operations as a result of failure to recognise the real cause of their ailments. Today, the favourite mis-diagnosis is 'slipped disc'; formerly it might have been 'floating kidney', 'appendicitis', 'lumbago' or 'sciatica'.

In practical terms, a severely twisted pelvis is a job for the trained manipulator—Naturopathic or Osteopathic. Less serious cases—more a lack of firmness between the bones—can respond well to vigorous exercise combined with improved nutrition and, usually, a drastic reduction of drinking. It need hardly be mentioned that these considerations will also have a beneficial effect upon the nervous system and upon circulatory efficiency in general. The same attention to posture which is good for the lungs and the neck is good for the tone of the abdomen and its blood-vessels.

Poor abdominal tone can also result from general over-eating, or from a badly unbalanced diet. Sheer bulk can over-distend the bowels, and this can also result from—or be aggravated by—foods which are not properly digested and which ferment, producing much gas. Whatever the cause, a tired, weakened abdominal musculature presents serious problems to the circulatory system. Abnormal blood-pressures follow.

'NORMAL'

Many people still believe that, for a given height, there is a *normal* weight; for example, that a man 5 ft. 11 in. tall should be 11 st. 7 lbs. Most weighing machines in public places have tables which set forth these 'normals' for men and for women; and they are so much nonsense. If they have any meaning at all, they represent only the *averages* for some quite arbitrary group of persons. However, the public and orthodox medicos both tend to believe that *averages* are *normals*. If, as the medicals tend to do, they take their measurements from their patients, they are liable to be far from the truth. Their average readings represent figures for unhealthy persons. So it was that in the early days of blood-pressure readings, tables were presented showing the 'normal' figures for persons of various ages. The systolic (highest) pressures were generally shown as being 100 units plus the person's age in years. However, it soon became evident that there had been miscalculation; the figures were more often found in obviously unhealthy patients than among reasonably healthy men and women. The next generation of figures quoted readings of approximately 100 units plus *half* the person's age. (Thus, a man of fifty who had been allocated a systolic pressure of 150 in the original tables was now expected to show 125 as his peak pressure.)

The insurance companies joined in the game, with a seriousness of purpose which the profit motive so often seems to induce. They found that their best risks for life-insurance usually had blood pressure readings lower even than the medical profession's new 'normals'. If those with 'abnormally low' pressures live longer than those with the conventional figures, to us this can mean only one thing: the normals have been incorrectly selected.

This is no isolated instance of what one may find throughout orthodox literature; repeatedly we are asked to accept, as 'normal', figures and conditions which are no more than averages of the specimens around the person making the claim. What is found to occur among typically malnourished, frustrated, denatured, civilised people is proclaimed as 'normal'; what is found among a minority—often a tiny proportion—who have learned a little about nutrition, philosophy and integrity of mind and body, is casually dismissed as 'abnormal'.

To the Naturopath, the criterion is simple. The real 'normal' is the optimum—the true best. It is that state in which we find mental and bodily functions working together efficiently and harmoniously; giving a maximum of useful output with a minimum of wear and tear, and being sustained throughout a long and productive lifetime. We therefore have more faith in the figures of the insurance actuary than in those of the medical observer whose material is largely hospitalised humanity.

There are communities among which it would be extremely difficult—perhaps impossible—to find one truly normal specimen. Yet that does not invalidate our standards of normality. It may be hard to accept that, as the classic joke has it, the platoon may be 'all out of step except our Jock'. Yet this can be the case in real life. To conform may be the friendly thing, the profitable thing, the comfortable thing; but it may still be the wrong thing. It may seem to make life easier, yet it can destroy the significance of an individual life. The interested, enquiring and persistent person may comprehend the true significance of 'normal' even though there may be no tangible or visible example of it. More, it is something which he may strive to approach, so himself becoming less typical of distressed and degraded humanity.

CHAPTER V — TRAINING AND THE GLANDS

Most of us are well aware that our physical bodies require to be exercised if they are to be well maintained. We also recognise that if we wish to be able to perform greater-than-usual feats we must make some kind of long-term preparation; we have to 'train'. Our hearts are no exception; if they are to be fit to meet emergencies they should be quite frequently asked to work harder than usual. It is here that so many well-meant warnings produce the worst effects. If the diagnostician sufficiently impresses the patient with the gravity of his findings, the patient is likely to discontinue what little training he has practised. 'Don't run up stairs', 'don't raise your arms above your head' and similar alarmist advice is guaranteed to diminish the heart's ability. What should be no more than trivial incidents then take on aspects of danger; any sudden or unexpected call for above-average effort can lead to distress and severe pain.

It may be helpful here to say a little about how the heart adjusts itself to meet the rapidly changing needs of the body. The mechanism lies partly within the heart itself, and relies upon the sensitivity of the heart-muscle to variations in its load. In general terms, the force of contraction of any muscle depends upon the extent to which it has been previously stretched. In all forms of sport we can observe that the most powerful kick, the heaviest punch or the greatest heave is produced when limbs or other structures are first drawn back to the limit.

Anything which obstructs the free flow of blood from the heart—such as increased general nervous tension—prevents the heart muscle from contracting fully. Specifically, the left ventricle is not completely emptied by the end of the wave of contraction. The residual quantity of blood within the ventricle is, however, immediately added to by a full charge of fresh blood from the auricle above. This combined volume of blood distends the ventricle to a greater capacity than in the foregoing pulses. The muscle of the ventricle is thus more fully extended and—by the mechanism outlined above—enabled to exert greater force upon its content of blood. Within a few more pulses, the overall circulation is restored to at least as ample proportions as before the obstructive state arose.

This automatic adjustment, due to the sensitivity of the heart's muscle fibres, operates with only a few seconds time lag. Nor is it a small degree of compensation which may be so produced. It has been claimed that a healthy heart may increase its effort *eightfold* in this fashion, 'without prior warning, without delay and without distress'. However, this is not to say that the situation may be allowed to run on indefinitely. All vital organs have good reserves of ability, but the longer they are induced to run above normal the shorter the effective life one may expect of them. Other things being equal, a heart which has to work twice as hard cannot be expected to last as long as it might with more reasonable treatment.

CIRCUMSTANCES

Two other factors creep in to the situation. Unless the individual is sufficiently well informed—and materially able—to keep his tissues properly nourished, persistent overload may quite soon reach intolerable levels. Related to this, any tissue which is distressed beyond a certain limit loses the ability to return to its true, normal form. Since it is the person who has been least fortunate in his circumstances who is most likely to suffer from overstrain, the combination of stresses may be dramatically disruptive. This is another way of saying that good-quality tissues have great reserves to withstand abuse, while tissues of poorer quality may be damaged by comparatively minor overloads.

It is by no means rare to find great physical ambition and determination in an individual whose tissues are not even up to average standards, and the history of sport and athletics is distressingly plentiful in such personal tragedies; young men and women who have performed heroically, and then within a few years collapsed as worn-out and broken creatures. They are the products of ill-informed training methods; of building massive muscles from inferior materials; of deliberately disregarding warning signs; of using some form of brain-washing or drugs to diminish natural, self-protective responses.

Such unfortunate cases are often misleadingly quoted to frighten those whose ambitions lie in a different direction; those who wish to build up their systems to a level adequate for everyday wear and tear. 'If an *athlete* can destroy himself with vigorous exercise, then think how much more vulnerable you, an invalid, must be'. It may seem like justifiable concern, yet the comparison is unsound; particularly so if the individual in question is possessed of reasonable intelligence and a little basic understanding of Nature Cure principles. As we have noted previously, for the person whose heart is under stress due to nervous tensions, almost any movement provides a measure of relief. If we can add to this a tolerable diet and some attention to posture, fresh air and emotional readjustment, quite vigorous exercise may produce steady, all-round improvement. The two characteristics of the desperate would-be athlete—nutritional error and a switching-off of all natural feelings—have no place in the more moderate and more balanced regime.

No less important is a factor which orthodox dieticians and trainers consistently overlook—the terribly weakening effects of excess fluids. No matter whether the favoured liquid be tea, coffee, beer, fruit juice or plain water, anything more than the minimum necessary for good bodily function is liable to produce bloated tissues, adding physical burdens and causing reduced strength in many ways. Depending upon the make-up of the particular individual, and all manner of factors in his or her life, such deterioration may show as disturbed blood-pressures, either higher or lower than normal. Waterlogging of the tissues can be particularly evident in such violently competitive activities as boxing or wrestling. Cuts, sprains and tears are far more likely to occur. However, these are the immediate and obvious effects; far more insidious can be the internal injuries sustained by the seemingly non-violent competitor whose heart is in poor condition and grossly over-strained. The damage there may not show for years afterwards, and it is seldom that anyone looks far enough back for the causes.

Of course, the heart is not alone in suffering from delayed damage. The nervous system is also prone to undergo slowly-advancing degeneration when its nutrition has not kept pace with its use. What is known as *Multiple,* or *Disseminated, Sclerosis* may develop years after faulty training for strenuous performances. (The same unhappy sequence may occur in a person whose daily work demands exertion beyond the body's capacity for maintenance. The athlete at least has the consolation of having had his or her day of glory. . . for what that is worth.)

But to revert to the heart and its behaviour when more-than-normally burdened; not only may it be unusually stretched, it is also speeded up. The vital factor here is that whatever the rate at which it beats, the heart takes just about the same time to empty. That is, the duration of the systole (contraction) is more or less constant. This means that there must be less time for the diastole (relaxation). In other words, when the beats follow too soon upon each other, the heart muscle spends more time actively working, and far less resting and recuperating. With increased work and less maintenance, the result is obvious; within finite time there must be a breakdown of function. However, unless the individual has awareness diminished by drugging or by immoderate excitement, powerful warnings will precede any serious damage. *Angina pectoris* is a violent pain, and it is vitally important that it *should* be commanding. It ought to force the individual to stop putting an excessive demand upon the heart.

However, with the prevailing attitude of our society to warnings and symptoms of disorder, it is not unusual for the alarmed individual to ask his or her doctor for 'something to cure the pain'. With the alarm-bells duly muffled, the once-warned person goes on to require still stronger dosages, and the inevitable—yet 'inexplicable'—total collapse.

PULSE RATE

Although 72 beats per minute is still almost universally accepted as the 'normal' rate of the heart, it has been our finding—over three generations—that the healthier individuals usually have a distinctly slower rate (when at rest). Orthodoxy has come a little way toward recognising this, by observing that well-trained athletes have resting pulse-rates 'considerably lower than normal'. We would say that even the non-competitive citizen is better off with a resting rate around 60 than around 72.

It has been said that 'thoughts are things', and they certainly have undeniable effects upon the behaviour of the heart and upon the state of the blood-vessels. Almost any kind of fear will produce an immediate speeding up of heart action and an increase of tension in the vessel-walls. This is due almost entirely to nervous responses, and both the pulse-rate and the pressure may fall back to normal in a short time, provided that the fright was only momentary. However, stronger or prolonged fear brings about a more lasting effect, by inducing the release into the blood of hormones from the adrenal glands. The influence of these may be quite short-lived, if the individual becomes involved in vigorous, muscular activity, or may be much extended if no such dispersal takes place.

More directly, the heart's action is powerfully affected by the *vagus* nerves. These, arising within the skull, pass down on either side of the neck and branch out into various vital structures, including the heart. Those trained in manipulative techniques are familiar with the way in which the heart may be speeded or slowed by appropriate inhibition or stimulation of the vagus nerves at the neck. The more the nerve is stimulated, the more it holds down the rate. (This is the opposite effect of that produced by other nervous controls of the heart, originating within the visceral areas; when these are stimulated, the heart is speeded) Orthodoxy apparently still refuses to recognise the manipulator's ability in this respect, despite repeated demonstrations over the years.

However, just because such control is possible, we do not automatically assume it to be desirable practice. Too easily, such an attitude can lead to mere symptom-treatment, with results which may be just as futile, and even as dangerous, as medication. The really useful aspect of the link between superficial nerve-trunks and the heart is that correction of faulty posture and release of emotional strains can be seen as having an immediately helpful effect upon the heart's functioning.

ADRENALS AND OTHER GLANDS

The link between blood-vessels and the adrenal—or 'suprarenal'—glands is similarly direct. The adrenals are not simple structures, but it may be permissible to regard them as having two distinct regions. There is the inner, or medullary, portion, which has been described as 'the brain of the pressure system'. It consists of nerve-like matter interwoven with 'the richest blood supply of any bodily organ'. With so intimate relationship between the mat of tiny vessels and the nervous tissue, the medullary portion is able to respond instantly to changes in the composition of the blood, and to relate these to the overall nervous state of the system.

The outer layer of the adrenals—their cortex—is responsible for producing adrenalin of variable composition. Depending upon the proportions of its constituents, this has specific stimulant or depressant effects upon muscles—including those in the blood-vessels—throughout the body. Without this means of interpreting the findings of the medullary portion, and converting the messages into chemical signals, the system rapidly shows signs of degeneration. Loss of appetite, lack of mental drive, limited respiration and irregularity of heart action may all result.

The adrenals are both anatomically and physiologically closely related to the kidneys. When the kidneys are distressed, the adrenals appear to suffer in sympathy; when the kidneys are more normally employed, the adrenals function better. Together, they may be influenced by several of the techniques in Naturopathic practice. Better balancing of diet, moderation of fluid intake, release of impeding tensions in the region of the kidneys and their spinal nerve centres, and possibly the application of simple water-treatments, may all have a fairly direct and prompt effect upon blood pressures.

Although the specialist investigator is prone to believe that *his* particular organ is the most important of all, there is a widespread acceptance of the claim that the thyroid is the 'king gland', controlling the activity of all other glands in the system. However, any gland which is disturbed in its function must alter the behaviour of the remainder. The specialist is thus able to discover changes in his pet tissue, whatever the overall disorder, and from this be easily misled into believing that he is observing *the cause* of the patient's illness. In fact, he is seeing only a tiny part of the whole picture. Perhaps because an unhappy thyroid is so outwardly noticeable—often as a swelling on the throat, accompanied by staring eyes—it may receive too much attention.

It is our finding that thyroid disorder is most often a result of faulty diet, and that in many cases attention to this aspect brings about quite steady improvement in function. Although the parathyroids have a different set of significances, they, too, are closely involved with the condition of the blood, and hence are involved in determining blood pressures. Another glandular structure having similarly marked influences on blood-pressures is the pancreas. The pancreatic failure known as diabetes presents a complex problem, but essentially its true recovery —so far as this may be possible—depends upon dietetic understanding and control.

Almost any glandular deficiency or excess may be compensated for by administering hormones (of synthetic origin or extracted from animals) or by the use of drugs with specific effects upon the tissues concerned. However, none of these is truly curative. At best, the medicament may alter one or two of the more obvious symptoms of the patient's disorder. The cost, inevitably, is that some other part or function of the patient's system is put under still greater stress. According to orthodox thinking, the new set of symptoms which develop have no relationship at all with the previous 'disease' and its 'cure'. A further diagnosis has to be made, and further treatment instituted for the new 'disease'. In James C. Thomson's classic words: 'The patient is "cured" repeatedly until he dies'.

Only by directing one's attention to the basic causes of the patient's distress and disorder may one hope to institute the reforms in his environment and ways of living which will enable his system to cure itself.

IMMUNISATION

Not only mistaken habits and ignorant medication are responsible for disrupting normal blood-pressures. For a fair proportion of the population, what is called 'preventive medicine' represents a considerable risk. Whatever disease the 'jab' may be intended to prevent, there is a far greater danger from the serum or vaccine than from the dreaded 'infection'. Many tissues in the body may be acutely distressed by the pollution of the bloodstream with the foreign substances. The nervous system is particularly prone, and even the medical profession has begun to recognise the danger here. Skin eruptions are obvious when they develop promptly. (They may also be extremely helpful, allowing the body to rid itself of toxic material in a direct and comparatively safe fashion.)

Far less obvious, because of what may be many years interval between inoculation and the observable symptoms, is the effect upon the blood-vessels. These are exposed most directly to the irritant effects of the injected material. The resultant inflammation produces scar tissue—in uncountable microscopic fibres—in the linings of the arterial walls. These tiny strands pose two long-term threats; they may induce the formation of other thickenings upon the vessel walls, and they inevitably produce some degree of constriction. The latter occurs because it is a characteristic of scar tissue to contract with the passing years.

From what we have already observed about the powerful effect of constriction of the smaller arteries upon blood-pressure, the consequences will be evident. Brain and kidney tissues are particularly liable to suffer when the smaller vessels lose their adaptability and elasticity. 'Hardening of the arteries' leads to impaired function of the brain and the vital organs, with outward signs known as 'premature ageing' or 'senility'. Inflammation of the brain is known to be one of the more common acute effects of vaccination. Should the victim survive that, it is cruel that he or she may, many years later, suffer from the chronic changes which stem directly from that inflammation.

CHAPTER VI — POISONS AND ELIMINATION

The accepted habits of civilised existence place a constant strain upon the blood-cleansing—or 'depurative'—organs. Dietetic errors and insufficient outdoor activity combine to produce more wastes than the body can effectively deal with. The blood is continuously charged with more than its fair quota of harmful matter, and this material causes the blood to become thickened. The substances involved are wastes in transit from the tissues to the depurative organs, and consist largely of acids of various kinds—hippuric, uric, and beta-oxybutyric—and assorted toxins. Because the acids form so large a part, we are often liable to refer to the wastes collectively as 'acids', and this may give the impression that the bloodstream is itself made acid by their presence. In truth, the blood has the ability to absorb considerable quantities of waste acids without becoming acidic.

However, the greater the acid content, the thicker—less free-flowing—the blood becomes. This demands harder work from the heart, and even then there may be deficient circulation in particular organs and regions of the body. When this occurs, the individual may become aware of various unpleasant sensations; chill, depression, lack of concentration and general weariness. One way and another, the individual is led to use certain foods and 'near-foods' to produce temporary relief from these miseries. This is where the prevalence of tea and coffee as beverages becomes understandable. They apparently work in two ways; first, by a direct stimulation, which releases additional energy from the body's vital reserves and, second, by a chemical effect upon the acidic burden of the bloodstream.

The first effect, the 'boost', has the expected reaction. In a short time the feeling of increased energy wears off, and exhaustion or tiredness is greater than before. The second effect has somewhat similar features, but in a different way. The gluey acids in the blood are to some extent precipitated by the active principles of the drinks. This means that a gummy mass is converted into a more fluid state, but containing crystals of acidic material. For a time, the blood can be circulated more freely, and with this there is a feeling of wellbeing.

However, the crystalline acids have not been eliminated; they are still within the body. Some may be deposited in such tissues as joints, muscles or nerves, giving rise to the symptoms of arthritis, fibrositis or neuritis. For the most part, however, the strain falls upon the walls of the blood-vessels themselves. Were the state of affairs to occur only infrequently, the walls could withstand the irritation. But when the 'attack' occurs several times per day, chronic changes begin to occur. The arterial walls gradually become thickened and hardened; 'arterio-sclerosis' has arrived.

So widespread is this development that many physiologists regard such degeneration as 'normal to increasing years'. A common result of arterial hardening is high blood pressure, and thus we see that it is not reasonable to try to deal with abnormalities of blood pressure without reference to the patient's habits of eating and drinking. Tobacco has effects somewhat similar to those of tea and coffee, and they all pander to the belief that disorder may be dealt with by postponing its effects. This belief is so common that 'everybody' accepts without comment the use of tea, coffee and tobacco as ways of 'putting off until tomorrow'. They are the social poisons.

OTHER POISONS

For the person with disturbed blood-pressure, the immediate problem may be how to stop being poisoned. Poisons are of many forms and arrive in various ways. Medical doctors warn their patients against some kinds yet appear unconcerned about others—at least as potent—given deliberately as treatment. The patient is warned against tobacco, yet is prescribed aspirin; warned against alcohol yet given sleeping-pills. By objective standards, each is as dangerous as the other.

Then there are the poisons generated within the patient's own body, largely due to eating unbalanced or defective foods, or by the disruptive effects of emotional stress upon physiology and metabolism.

The most evil effects of poisons are not that they kill, damage or cause pain. Bad as these may be, they are not as serious as the insidious effects upon the intelligence of the tissues and organs. The former are obvious, and should lead to immediate rejection; the latter may be quite unrecognised until hopeless deterioration has occurred. So far as blood-pressure is concerned, we have already noted some of the ways in which this is influenced and controlled by the unconsciou — somatic—intelligence, and it must be obvious that anything which degrades that intelligence must lead to serious disorder. In other words, we cannot hope to produce normality of blood pressure while the regulating mechanisms are deranged by any form of poison, whether this be bodily toxin, social poison, herbal remedy or doctor's prescription.

CURES

Over the years, many agents have been medically recommended to produce greater tone where low blood pressure has been diagnosed. None of these is in any way curative—in the true sense of the word—but all may be capable of causing more or less serious irritation of the nervous controls. The list is long, and might even be comical were its implications not tragic. The plain fact is that there is no specific 'cure' for low blood pressure. One must seek to find what deficiencies and excesses may exist in the individual existence, then set about guiding, instructing and encouraging into more wholesome ways.

In the same way, there have been uncountable offerings of good medical advice for the sufferer from high blood pressure, with terrifying lists of chemical 'remedies'. Here, by way of contrast, is an exceptionally clear-sighted statement by a couple of American doctors, Lewellys F. Barker and Normal B. Cole, in their book *Blood Pressure*:

> Hypertension is a symptom rather than a disease. It is a symptom that appears after certain changes in the structure and in the functions of the body have occurred, some of which we have been able to trace, though others still remain unknown. The high blood pressure is *needed for the welfare of the body* as changed; obviously, then, unless we can remove the changes that have made the high pressure necessary, we might do harm by directly lowering the blood pressure by drugs. [Our italics]
>
> Hypertension, it must be reiterated, is only an adaptation of the mechanics of the circulatory system to certain underlying changes. It is these changes, whatever they may be, that must be sought out and, wherever possible, removed . . . At no stage is it the part of wisdom to treat results only and to let causal conditions stand.
>
> The use of drugs to reduce high blood pressure directly is not rational and is rapidly falling into disuse and disrepute.

That was written some twenty years ago, but the hopeful message of the final sentence shows no sign of being realised.

CYNIC

One of James C. Thomson's early patients had, as a young man, been a medical student. In his final year, he became seriously ill and had to discontinue his studies. With access to the most eminent specialists, he consulted the cream of the medical profession, but their advice brought no apparent benefit. In growing disappointment he became desperate, and he prepared a table of all the advice he had been given; he entered all the 'Dos' in one column and all the 'Don'ts' in another. After deep and serious consideration he made a remarkable decision; he began to do all the things he had been warned against, and avoided all the things he had been advised to do. According to his testimony, 'From that moment I began to improve.' He recovered enough to resume normal living, and decided to give up medicine as a career. Instead, he went into a business which took him all over the world.

If ever he found himself ill, he sought the most highly recommended specialist and asked him for a detailed set of instructions: *What to do* and *What not to do*. With this before him, he confidently set about his own treatment, doing the opposite of what had been set out. He claimed that his wonderful discovery had stood him in good stead until he came into contact with Nature Cure, in which he recognised the reasons for his success.

At the time in question, this audacious scheme may have been more than accidentally effective, but even when J.C.T. first wrote of it—35 years ago—it had become unreliable. By then, quite a proportion of doctors had begun to question symptomatic treatment, and a few had heard something of the logical approach of Naturopaths. Just as the two doctors quoted above, more-or-less independent investigators were noticing and reporting things which did not tally with orthodox teachings.

After thirty-five years of life insurance work, Dr S. H. Burgen of Toledo (USA) prepared a report which included the following:

> My attention was first called to the insidious effects beer-drinking when I began examining for life insurance. I passed as usually good risks five young business men who seemed to have superb constitutions. In a few years I was amazed to see all five drop off, one after another, with what ought to have been mild and easily curable attacks of diseases. On comparing my experience with that of other physicians, I found that they were all having similar luck with confirmed beer drinkers, and the incidents of my practice since then have heaped up confirmation upon confirmation.
>
> The first organ to be attacked is the kidney; the liver follows and then comes, most frequently, Bright's disease, which is certain to end fatally. Any physician who cares to take the time will tell you that the beer drinker seems incapable of recovering from the effects of mild disorders and injuries not usually regarded as of a grave character.

Large volumes of any liquid throw tremendous strains upon the bodily tissues. The kidneys as we have already noted, are particularly badly affected, but the heart and all the vessels are put under stress. Alcohol adds to the problem partly by its effects on the vaso-motor nerves and partly by its depressant effects on the bodily intelligence.

CHRONIC DISTRESS

We have seen, throughout this writing, that there are many mechanisms involved in maintaining effective and properly-distributed circulation. Whenever one of these mechanisms is for any reason put out of action, in the healthy subject the others are well able to share the added responsibility. All are alert to changes, and all are able to add to their routine duties to meet passing emergencies.

When a rise in pressure is required, this is effected by the sympathetic nervous controls in the following ways: (i) an increased pulse-rate, which means a greater flow of blood per minute; (ii) increased force of contraction of the heart muscle, with a similar effect on the flow; (iii) glandular activity, especially of adrenals and thyroid, which produces a tensing effect on vessel walls, most noticeable where large mats or beds of small vessels occur, e.g. in the abdomen; (iv) a *generalised* activation of the vaso-motors (as contrasted with the compensatory tension in one area and relaxation in another which characterises normal postural changes); (v) increased tone in muscles throughout the body, which exerts pressure upon blood-vessels and so adds to the pressure within.

In normal conditions, each of these controls is harmoniously co-ordinated with the others. Should anything disrupt this relationship, violent changes in pressure may result. Again, each control works within wide margins of tolerance, but when the general strain is prolonged the margin is reduced. A stage may thus be reached wherein a sudden physiological stress may simultaneously trigger off the major controls. Unless immediately regulated, the combined effect may be to carry pressures beyond safe limits.

COMPENSATION

Where emotionally-disturbed states are long drawn out, the most constant factor appears to be resistance within the smallest arteries, the arterioles. The most usual attempt to overcome this is made by the heart speeding up. However, as we have previously noted, it is not possible for such extra effort to be continued indefinitely without risk of permanent damage. Therefore the heart may attempt to meet the situation by becoming larger and by developing stronger muscular walls. By this means, an increased volume of blood per minute may be pumped through, and the pulse rate may fall back to a more or less normal figure. This alteration of the heart structure, which takes a considerable time to be effected, is called *compensation*. It can also be called 'enlarged heart'.

Whether it is an advantage or a menace depends largely upon the quality of tissue with which the growth is produced. Should the general nutrition be poor, there is considerable risk of complications. If proper elasticity of the tissues is not maintained, the enlarged walls may yield and thus exert distorting strains upon the heart valves. 'Incompetence' is the danger.

KIDNEYS

Sustained abnormal pressures also have a devastating effect upon the kidneys. In the condition known as Bright's disease, or nephritis, the blood-pressure figures can be dramatically high. There is a kind of chain reaction at work. It seems to start with a generalised high pressure in the body, produced by such factors as listed above, and this also affects the circulation of blood through the kidneys. With diminished kidney activity, as a direct result of reduced blood-flow, there is a failure to excrete the very kind of wastes which contribute so markedly to the general hypertension. Greater obstruction is thereby produced, and the difficulties of the kidneys are intensified.

Here we may often find a kind of compensation taking place in other organs and tissues, variously known as *transferred* or *reversed* function. By this we mean that, for example, the linings of the digestive tract may start to work abnormally. Ordinarily, the mucous tissues of the tract have an absorptive or assimilative function; they *take in* food substances. When the body's condition, and in particular the blood's content, becomes excessively distressed, the mucosa begins to eliminate; it takes waste substances from the blood and voids these into the gut. A similar reversal or transference of function may occur in the lungs. There, instead of absorbing oxygen and throwing out the simple, gaseous waste carbon dioxide, the linings of the tubes eliminate more substantial, catarrhal wastes.

This does not occur without protest and distress; in James C. Thomson's words: 'With obvious grinding of gears, part of the work is taken over from the kidneys, or whichever organ has fallen too far behind.' But it does occur, and it is a desperate attempt to save the life of the individual. And it is commonly misunderstood; the physician diagnoses 'gastritis' or 'bronchitis', and for these prescribes suitable remedies. To the extent that his treatment is successful, the emergency method of maintaining vital function is frustrated, and the patient's condition is made more serious.

Although alimentary or respiratory involvements are most common, almost any active tissue or organ of the body may be pressed into emergency service, and each is liable to be diagnosed as a separate 'disease'. The more 'treatment' this involves, the worse the prognosis. It is not that there are 'new, complicating diseases'; it is that the basic disorder has not been recognised and the body's attempts to rectify the situation are persistently obstructed. With terrifying speed, the the possibilities become totally destructive.

CHAPTER VII — TOWARD RECOVERY

It has often been ironically asserted that 'there are *no* symptoms of high blood pressure'. Technically, that may be a correct observation, but it overlooks the many signs of stress throughout the body which may stem more or less directly from hypertension. To 'treat' one or more of these without regard to the primary disorder should be classed as criminal malpractice. To ascribe blame for the conditions to bacteria or viruses is both ignorant and illogical.

In addition to the extraordinary efforts of gut and lungs, just noted, the skin may also act with self-sacrificing zeal. Pimples, pustules and boils, as well as the more generalised rashes, all represent effective—even though uncomfortable and damaging—methods of helping to restore a workable state of blood-chemistry. Comparably, diarrhoea or vomiting, or the production of copious catarrh from the lungs, may be the most effective means whereby the system maintains vital function. Such a statement may be hard for the orthodox onlooker or the new patient to Nature Cure to accept, but more than four generations of close observation have confirmed it a myriad times.

QUANTITIES

The popular press is forever being profoundly astonished by reports of people who either regain health by fasting or who maintain active health by eating frugally. If one accepts that among those human who can afford enough to eat, overeating is by far the commonest cause of illness, the rest is a matter of simple logic. This is not to say that it is the *only* cause, or even the most powerful one; only that it is the *commonest*. (At least as important in many cases are environmental evils and emotional stress). A single fast cannot produce a lasting cure. It may offer the body a true opportunity of rectifying its maladjustments, but unless the individual follows the fast with a more intelligent regimen than previously, the troubles must regenerate.

A fast may, literally, save a man's life, but to keep on living he has to resume eating. Where the choice exists, we prefer that our patients should keep consistently to sensible, modest ways of eating, rather than alternate between uncaring overeating and dramatic fasts. The latter may be one way of surviving, but it is an inefficient way; each episode of overeating and its resultant disorders consumes irreplaceable vital energy. Unlike the clients of some 'health homes', patients who come to Kingston are quickly disabused of any idea that they are there for 'a cure'. We make it quite clear that our function is to instruct and guide the patient into an adequately reformed routine of living, which must be maintained thereafter.

Moderation in food is a basic requirement of a healthful daily habit, and such standard works as *About Eating for Health* give fair guidance on quantity and proportion. Moderation in drinking is just as vital, and this point has been regularly hammered home in the *Kingston Chronicle,* as well as in the works *Intestinal Fitness* and *Weight* *and Water*. James C. Thomson offered the following double-barrelled motto to the health-seeker:

EAT ONLY WHEN NATURALLY HUNGRY
DRINK ONLY WHEN NATURALLY THIRSTY

Another philosopher of food put it more strongly: 'Take nothing but solids into the mouth; swallow nothing but liquids'. Between these two distilled essences of wisdom, the basic advice to the sufferer from disturbed blood-pressure is well captured.

PROFIT

Natural appetite and natural thirst are rarely experienced by civilised persons. Condiments of all kinds, plus 'appetisers' in solid or in alcoholic form, produce powerful but perverted cravings. Salt and sugar are everyday examples of thirst—and appetite—provokers, and in every kind of processed food these and more insidious chemicals form an important part of the list of ingredients. They are not there for the benefits of the consumer; they are there for the profit of the manufacturers.

To give only two, simple instances of how unnecessary water, sugar or salt disturb vital function, consider these factors: The greater part of the physiological working of our bodies is carried out in the form of chemical reactions. Although often complex, these reactions can—just like the simplest actions of one chemical upon another—be slowed down by dilution. Secondly, the delicate selectivity by which cells take goodness into themselves, and unburden themselves of wastes, is largely dependent upon the different concentrations of sugars and salts within the blood and within the cells. Such transfers can be seriously impeded by abnormal proportions. In a few words, more sugar and salt taken into the body means more retention of soluble wastes in the tissues.

However, in any particular case there may be many other factors at least as important as the foregoing, and this is why it can be valuable —even if not essential—to consult someone trained in Nature Cure as a starting-point. When a person is ill because of three, four or five adverse factors in his daily living, it may give considerable relief and genuine benefit to rectify one or two of those factors. More systematic and sustained progress can be looked for when the errors are more completely recognised and rectified.

SELF-IMPROVEMENT

Here it may be well to re-present, slightly paraphrased, the advice which James C. Thomson offered to his readers:

1. If at all possible, consult a trained Naturopath.
2. If 1 is not possible, go slowly and steadily at first.
3. Be patient. The best results in blood-pressure conditions come slowly and after extensive preparatory work. (Do not expect

obvious changes to occur within days; many weeks, even some months, may elapse before benefits of reform become evident.)

4. Avoid 'friends' who would discourage you.
5. Proceed with mental and physical assurance; hold your head high and your abdomen well up.
6. Know that it can be done, and visualise your life accordingly.

VITALITY

All high-pressure conditions depend upon vitality. The primary causes may lie in disorder of the nervous system, of glandular tissues or of dietetic balance, but the fact of high pressure indicates that the vital system is *responding* to the needs of the situation. There is a will to fight and survive, and this energy is potentially available for the process of recovery.

For those with low pressure, there is an equivalent comfort. The causes may be comparatively simple, such as a so-called vegetarian diet which may be lacking in balance. The low differential pressure in such a case results in lowered vitality and sluggish mental drive. Against this, heart and blood-vessels are not being over-stressed; they are not liable to become worn-out prematurely. The abnormally low pressure is not dangerous to life. Low pressure means low drive, but the structures of blood-circulation resemble those of any other mechanism—when not over-driven they last longer.

The world's work is done by those with high differential pressure, and there appears to be a positive connection between high differential, physical drive and mental initiative. This is not to say that anyone with high pressure has great capability: his vital organs may be so distressed that he cannot produce even a normal output. However, it seems rarely possible for a reasonably healthy individual to give super-normal performance without the aid of super-normal blood-pressure. For such a person to reduce his pressures by lowering his vital tone is a poor bargain. Overwork, sustained anxiety, shock, starvation, exhaustion and a variety of drugs may all bring down the systolic pressure, but without the benefits of true normality.

SELF REPAIR

The approach to a truly worth-while normality—whether this be above or below the existing state—must lie through regeneration of the body's tissues. In the simplest terms, the quality of the blood must be improved, its content of wastes reduced and its effective circulation revived. As these conditions are achieved—by diligence and patience—the individual cells of all tissues and organs will be enabled to put their self-reparative powers to work.

However, there are limits to this possibility. Should the individual persist in habits and occupations which distress the nervous system, the repair processes will be handicapped. That may be capable of resolution, given adequate understanding and purposeful application. What no amount of analysis or determination can do is to restore those parts of certain vital organs which may have been already lost. This is where another kind of understanding is called for; a realisation that although complete repair may be impossible, a good, working compensation may be achieved. If one cannot restore missing kidney tissue, for example, one must do all possible to reduce the burden put upon the surviving fragments. Even so elementary a step as cutting out two cups of tea or coffee per day may allow the kidneys to develop a small, but valuable, reserve, where before there was only a deadly inadequacy.

YOUTHFULNESS

Some rewards can be astonishingly prompt. Although there may be little to show, by ordinary methods of diagnosis, the patient's own feelings may rapidly take a turn for the better. This is a powerful therapeutic factor, since any increase in confidence still further eases the overall strains upon the system. It is often observed that men and women who take up the Nature Cure way of living seem to become younger—within a couple of years of establishing the new regimen, ten years of age can drop from them. This is not merely fanciful or a superficial appearance; their tissues are genuinely more youthful, with restored firmness, elasticity and vigour.

What shows in skin and complexion has also taken place in such internal structures as blood-vessels. These lose the thickened stiffness, which resulted from years of overload and exposure to blood overcharged with acidic and other corrosive wastes. It does not happen all at once; vessels which have become prematurely aged are not ideally suited to the extra work which the process of rejuvenation must—for some time—impose. Somehow, the replacement of old and stale by fresh and vital has to be accomplished without seriously impeding normal daily function. Patience and understanding must be provided in generous quantities by the individual concerned. Of the two years mentioned above—as a rule-of-thumb figure—the first six months may show little more than some rather uncomfortable spells; these are instalments of *healing crisis* activity, during which eliminative and reparative functions tend to dominate the scene for a few days at a time.

CONDITIONS

The next six months may show more evident outward signs of progress, and the second year may—in favourable cases—represent a fairly steady all-round improvement. However, it must be stressed that these figures are neither a promise nor a limitation; individual temperament, resources and environment may make possible much more speedy recovery or may pose severe handicaps. The rate of progress must be recognised as less important than the direction of travel.

Where any doubt exists, one must always accept the slower as the safer course. This is especially true where exceptionally high pressures are involved. As an example of what to avoid, dramatic changes can be produced by fasting, with reductions of pressure as great as heavy medication can induce. This might seem entirely beneficial, since nothing about fasting could be described as obstructive or suppressive. However, the human system is a complex affair; its responses are not as simply mechanical as some imagine. No matter how unsuitable existing conditions may be, the body adapts to these as fully as it may. It keeps its balance by maintaining a counter-pressure against the external stresses. Remove these stresses too suddenly and balance may be severely—even fatally—lost.

We have to accept that a patient who comes to us dependent upon some drug may have to continue for a time, with gradually diminishing dosage; so one accustomed to unsuitable feeding may have to be allowed a period of readjustment, rather than be abruptly cut off. It has been our finding, over several generations, that violently altered blood-chemistry may lead to spectacular short-term signs of improvement, but with great risk of serious complications thereafter. The explanation appears to lie in what happens to the accumulations of acidic and other wastes which have been deposited over the preceding tens of years. If the blood is made just a little better than before, these deposits may be gradually uplifted and be readily dealt with by the eliminative organs. But if there is a radical change in the composition of the blood, the deposits may be released into the circulation in dangerous and unmanageable concentrations. The wastes which have hitherto lined blood-vessel walls or lain in other tissues are chemically activated. After a brief spell of seemingly miraculous improvement, the patient suffers an 'inexplicable relapse'. The blood is choked with wastes in quantities unequalled even during the worst spells of previous illness.

RESTRAINT

Over-enthusiasm may be encountered less often than apathy, but it can lead to just as much waste of vital potential, and in a much more alarming way. Over-enthusiasm is a stage which many of those who come to Nature Cure after years of frustration are liable to experience. With proper understanding, and judicious forewarning by the practitioner, this force can be usefully directed. Without such control, it can lead to squandering of reserves and a drastically diminished prospect of ultimate recovery. It is in such situations that the guidance of a properly-trained Naturopath may be essential: someone who can observe the patient objectively, and from experience and reasoning judge how and where effort should be exerted.

In most cases, however, and provided that the individual patient is prepared for a long campaign, there is nothing to fear from applying corrective measures such as those suggested throughout these pages. They are not in themselves violent, and should provoke no response too vigorous for the understanding patient to cope with. Only where the individual is dependent upon some drug to 'control' blood-pressure is professional guidance a necessity.

SUMMARY

In conclusion, let us recall some of the points raised in the foregoing pages, and perhaps interpolate a few addition. No such list can be complete for any particular case, but those which follow are among the most generally applicable. They all have this enormous advantage over any system of medication—they should also benefit any person in good health.

Deep Breathing, as a deliberate exercise and carried out for a few minutes at a time on at least three or four occasions per day. This produces movement between, and improved circulation within, the ribs, so encouraging the production of red blood cells in adequate numbers. Better intake of oxygen combined with better quality blood makes adequate circulation easier for the heart to accomplish.

Chew Thoroughly every bite, with lips closed and breathing vigorously through the nose. (This can be done without any outward sign of strain or noise.) Digestion is thereby made more effective, and in particular the body is enabled to extract many valuable constituents of natural foods, which are otherwise liable to pass through unused.

Physiological Rest: a weekly recuperation. At least during the early stages of treatment, there is often a need for more rest than possible with ordinary routines. One day a week, stay in bed, keep warm, eat nothing, drink nothing. This rest should extend through two nights and one day, during which the individual should be content to be a vegetable, without excitement from reading, radio or TV.

(As fuller explanation, it should be pointed out: 1. that to digest a heavy meal calls for as much effort by the body as several hours of heavy physical work. 2. that watery excess is one of the commonest factors demanding abnormally high pressures from the heart. 3. that disturbing excitement produces severe intensification of nervous tension. 4. that although there should be no drinking in quantity, if there is genuine thirst occasional sips of plain water are in order.)

Abdominal Tone is a vital factor, and the muscles of the abdominal wall should be regularly exercised. Remember the analogy of the hot-water-bottle, and see the abdominal muscles as providing support for the internal mass of blood-vessels, just as the hands can prevent the water-bottle from bulging below and emptying above.

To begin with, it calls for much deliberate effort to pull up the sagging abdominal muscles and raise the chest to accommodate the elevated abdominal contents. However, such effort is well repaid, and has a progressively telling effect. (The application of flattening pressure from outside, by any form of garment or support has, on the contrary, only an aggravating effect upon abdominal ptosis.) In the early stages, simple exercises may be supplemented by massage, if this is available. Failing this, consult a good book on exercise for suitable movements. Those performed from a supine position, then the more ambitious forms with the body upside down, supported on shoulders and elbows, are most suitable. Toe-touching and similar abdomen-crushing movements are NOT suitable.

Plan Ahead to what you intend to do with your health as it is regained. Without some such long-range purpose, your efforts will be less rewarding. 'Constructive day-dreaming' can be powerfully helpful to recovery where a mood of hopelessness may have prevailed before. To regain health is not a complete end in itself: it should be as part of a larger ambition.

Be Honest. Many patients have become accustomed to pouring medicines down the sink. That may be understandable, but when a Naturopath gives advice such mental attitudes of deceit can be dangerous: to deceive another person is easy; to deceive your own body is impossible. A smoke, a cup of tea or an aspirin may be taken without the practitioner's knowledge; your body is not deceived.

Face Realities. There are no short-cuts to genuine cure. When you undertake your own treatment you have a formidable task ahead. There is nothing to prevent self-cure; properly understood, it is the only cure. Even so, there can be difficulties, of which the sheer length of time required for recovery can be the most daunting. As a rule-of-thumb, we estimate that for each year that went into producing the state of ill-health, one has to allow the system about a month to repair and restore. This does *not* mean only each year since the symptoms became undeniable; it means each year of ignorant or wilful wrong living; each year of smoking, of tea-swilling, of unbalanced feeding, of disruptive posture and of emotional stress. For most people, this means something like half their life; so allow six months of effort for each ten years of one's age.

Encouraging signs of improvement may be looked for long before that; but the opportunity for continued progress should be open all the rest of your life.

The contents of this book appeared first in *The Kingston Chronicle*, between Autumn 1973 and Autumn 1974. *The Kingston Chronicle (Rude Health)* is published every now and then. Specimen copy and details of subscription from: Literature Secretary, Kingston Clinic, Edinburgh, EH16 5UQ.

HIGH AND LOW BLOOD PRESSURE

by

C. Leslie Thomson

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T.K. Publications, Kingston, Edinburgh, EH16 5UQ
Printed by Mackenzie & Storrie Ltd., 28-32 Coburg Street, Edinburgh